Bathymetry (Surface and Contours)

(Slides 7-10)

Bathymetric Surface, (data provided by Batelle) 83m grid cell size

Bathymetric Contours (data provided by Batelle) 1m contour intervals. Elevations 18m and less depicted in black to illustrate screening exclusion zone.

Multibeam LIDAR Bathymetry, NOAA/USGS (2011)

National Oceanic and Atmospheric Administration, and U.S. Geological Survey, 2011, ELISCOMB_UTM: 4-m Grid of the Combined Multibeam and LIDAR Bathymetry Generated from National Oceanic and Atmospheric Administration (NOAA) Surveys H11224, H11225, H11250, H11251, H11252, H11361, H11441, H11442, H11445, H11446, H11997, H11999, H12012, and H12013 Offshore in Eastern Long Island Sound and Westernmost Block Island Sound (UTM Zone 18, NAD83): Open-File Report 2011-1003, U.S. Geological Survey, Coastal and Marine Geology Program, Woods Hole Coastal and Marine Science Center, Woods Hole, MA. Time period of data is 2003-2009.

Metadata

Bathymetry

High Resolution Bathymetry

E:\Work\CKL500C6-LISound\GISData\Bathym_USGS\Bathy_Image eliscomb_4mbat_utm18.tif

Originator: National Oceanic and Atmospheric Administration

Originator: U.S. Geological Survey

Publication_Date: 2011

Title: ELISCOMB_UTM: 4-m Grid of the Combined Multibeam and LIDAR Bathymetry Generated from National Oceanic and Atmospheric Administration (NOAA) Surveys H11224, H11225, H11250, H11251, H11252, H11361, H11441, H11442, H11445, H11446, H11997, H11999, H12012, and H12013 Offshore in Eastern Long Island Sound and Westernmost Block Island Sound (UTM Zone 18, NAD83)

Online_Linkage: http://pubs.usgs.gov/of/2011/1003/html/catalog.html

Online_Linkage: http://pubs.usgs.gov/of/2011/1003/data/bathy/grids/geo/eliscomb_utm.zip

Abstract: The USGS, in cooperation with NOAA and the Connecticut DEP, is producing detailed maps of the seafloor in Long Island Sound. The current phase of this cooperative research program is directed

toward analyzing how bathymetric relief relates to the distribution of sedimentary environments and benthic communities. As part of this program, digital terrain models (DTMs) from bathymetry collected as part of NOAA's hydrographic charting activities are converted into ESRI raster grids and imagery (primarily of 2-m resolution), verified with bottom sampling and photography, and used to produce interpretations of seabed geology and hydrodynamic processes. Although each of the 18 completed surveys, ranging in area from 12 to 293 square kilometers, individually provides important benthic environmental information, many applications require a geographically broader perspective. For example, the usefulness of individual surveys is limited for the planning and construction of cross-Sound infrastructure, such as cables and pipelines, or for the testing of regional circulation models. To address this need, we integrated 12 multibeam and 2 LIDAR (Light Detection and Ranging) contiguous bathymetric DTMs into one dataset that covers much of eastern Long Island Sound. The new dataset is adjusted to mean lower low water, is provided in UTM Zone 18 NAD83 and geographic WGS84 projections, and is gridded to 4-m resolution. This resolution is adequate for seafloor-feature and process interpretation, but small enough to be queried and manipulated with standard GIS programs and to allow for future growth. Natural features visible in the grid include exposed bedrock outcrops, boulder lag deposits of submerged moraines, sand-wave fields, and scour depressions that reflect the strength of the oscillating tidal currents. Bedform asymmetry allows interpretations of net sediment transport. Anthropogenic artifacts visible in the bathymetric data include a dredged channel, shipwrecks, dredge spoils, mooring anchors, prop-scour depressions, buried cables, and bridge footings. Together the merged data reveal a larger, more continuous perspective of bathymetric topography than previously available, providing a fundamental framework for research and resource management activities in this major east-coast estuary.

Purpose: To release a 4-m grid of the combined multibeam and LIDAR bathymetry generated from NOAA surveys H11224, H11225, H11250, H11251, H11252, H11361, H11441, H11442, H11445, H11446, H11997, H11999, H12012, and H12013 offshore in eastern Long Island Sound and westernmost Block Island Sound in UTM Zone 18, NAD83.

Time_Period_of_Content: 2003/10/06 – 2009/05/17

Currentness_Reference: ground condition (See the source citation in the lineage section for individual component's specific dates.)

Sediment Texture

Slides 11-13

Distribution of Surficial Sediments in Long Island Sound, USGS OFR 00-304, 2000

Source:

During field work conducted in Long Island Sound during June 1992 and March 1998, a total of 1,554 samples were collected. These samples were placed in sealed containers aboard ship and frozen for later grain-size analysis.

Process:

Samples for grain-size analysis were disaggregated and wet seived to separate the coarse and fine fractions. The fine fraction was analyzed by Coulter Counters. The coarse fraction was analyzed by sieving and a rapid sediment analyzer. Bivalve shells and other biogenic carbonate debris were manually removed from the gravel fraction before analysis. All textural data were salt corrected.

Grain-size analysis data points and values were plotted on paper and hand contoured, then scanned and digitized.

USGS East Coast Sediment Texture Database (USGS ECSTDB 2005) Edition: 2.1

Sediment sample locations

This sediment database contains location, description, and texture of samples taken by numerous marine sampling programs. Most of the samples are from the Atlantic Continental Margin of the United States, but some are from as diverse locations as Lake Baikal, Russia, the Hawaiian Islands region, Puerto Rico, the Gulf of Mexico, and Lake Michigan. The database presently contains data for over 23,000 samples, which includes texture data for approximately 3800 samples taken or analyzed by the Atlantic Continental Margin Program, a joint U.S. Geological Survey/Woods Hole Oceanographic Institution project conducted from 1962 to 1970.

Purpose: This ArcView shapefile contains the locations of marine sediment samples collected and analyzed by the U.S. Geological Survey, Woods Hole Science Center starting in 1962 thru 1999.

East-Coast Sediment Analysis: Procedures, Database, and GIS Data, USGS Open-File Report 2005-1001, Publication date: 2005

Sediment Grain Size (generalized, not shown for the area where LIS polygon data is available)

Abstract:

Sediments off the eastern United States vary markedly in texture - the size, shape, and arrangement of their grains. However, for descriptive purposes, it is typically most useful to classify these sediments according to their grain-size distributions. Starting in 1962, the U.S. Geological Survey (USGS) and the Woods Hole Oceanographic Institution (WHOI) began a joint program to study the marine geology of the continental margin off the Atlantic coast of the United States. As part of this program and numerous subsequent projects, thousands of sediment samples were collected and analyzed for particle size.

The sediment map of the Continental Margin Mapping Program (CONMAP) series is a compilation of grain-size data produced in the sedimentation laboratory of the Woods Hole Science Center (WHSC) of the Coastal and Marine Geology Program (CMGP) of the U.S. Geological Survey (USGS) and from both published and unpublished studies. Sediment was classified using the Wentworth (1929) grain-size scale and the Shepard (1954) scheme of sediment classification. Certain grain-size categories are combined because of the paucity of some sediment textures; blank parts of the maps indicate areas where data are insufficient to infer sediment type. Bathymetry is used as a guide in placing some of the contacts between different sediment types. However, because the true boundaries between sediment types are probably highly irregular or gradational, because the extreme textural variability that characterizes some areas does not appear at this scale, and because the accuracy of the navigational systems used during the earlier studies is limited, all contacts should be considered to be inferred.

The sediment classification for any given polygon (i.e. area) reflects the dominant surficial sediment type for that polygon. It does not mean that other sediment types are not present within the polygon, only that the dominant sediment type is the one that is most common.

Purpose:

The purpose of the CONMAPSG sediment layer is to show the sediment grain size distributions. The maps depicted in this series are old and do not accurately depict small-scale sediment distributions or sea-floor variability. This data layer is supplied primarily as a gross overview and to show general textural trends.

Time Period: 1982-1999

Marine Transportation

(Multiple Maps)

Marine Transportation and Anchorages*

Marine Transportation Northeast United States (NOAA, 2012)

Geographic location and identity of designated areas used to manage vessel traffic in the northeast United States coastal and offshore environment.

Authority: 33 U.S.C. 1223; Department of Homeland Security Delegation No. 0170.0.

Source: CGD 81-080, 48 FR 36456, Aug. 11, 1983, and Electronic Nautical Chart web services.

Anchorage (NOAA 2012)

Authority: 33 U.S.C. 471, 1221 through 1236, 2030, 2035, 2071; 33 CFR 1.05–1(g); Department of Homeland Security Delegation No. 0170.1.

Source: CGFR 67–46, 32 FR 17728, Dec. 12, 1967; Boundaries coincident with the shoreline were extracted from NOAA Composite Shoreline and integrated into the anchorage feature

Safety Security Regulated Areas (NOAA 2012)

The Regulated, Safety and Security Zones map layer identifies areas in which vessel access is either limited or restricted, or within which special regulations apply. The primary source material consisted of coordinates from the electronic Code of Federal Regulations (CFR), Title 33, Part 165, Subpart F, First Coast Guard District.
Electronic Code of Federal Regulations – Title 33: Navigation and Navigable Waters, Part 165, Subpart F, First Coast Guard District

Feature types:
Regulated Navigation Area - a water area within a defined boundary for which regulations for vessels navigating within the area have been established under this part. Regulations might be temporary, permanent, or subject to certain conditions.
Safety and Security Zone – an area which meets the criteria of both safety and security zones as defined below
Safety Zone - a water area, shore area, or water and shore area to which, for safety or environmental purposes, access is limited to authorized persons, vehicles, or vessels, either temporarily, permanently, or under specific conditions. It may be stationary and described by fixed limits or it may be described as a zone around a vessel in motion. In cases where the safety zone exists around a temporary marine event, the zone is named by the event type.
Security Zone - an area of land, water, or land and water which is so designated by the Captain of the Port or District Commander for such time as is necessary to prevent damage or injury to any vessel or waterfront facility, to safeguard ports, harbors, territories, or waters of the United States or to secure the observance of the rights and obligations of the United States.

** Marine Transportation data were downloaded from the Northeast Ocean Data Portal.*

Cables and Pipelines(Slide 15)

Cables and Pipelines, CTDEEP (2002, updated 2005) *

Documents the location of submerged cable and/or pipeline areas and can include electrical transmission lines, telephone and/or fiber optic cables, natural gas and/or petroleum pipelines. Data are based on information from the 2002 edition of NOAA charts, a field survey conducted by OSI, Inc. and the location Broadwater Energy proposed pipelines. Last updated in 2005. (Reviewed and minor updates performed against current RNC data in 2013).

Pipeline Areas, (Northeast Ocean Data Portal, 2011) *

Pipeline areas include data from NOAA ENC Direct to GIS and digitized from NOAA RNC electronic charts.

**** Note: Representation of submarine cables and pipelines on nautical charts, 33 CFR Ch. 11, 209.310***

The location of submarine cables and pipelines is indicated on the NOAA charts by shaded areas marked "Pipeline area" or "Cable area". The extent of the limits of the area is governed by local conditions and includes the immediate area which overlies the cable or pipeline. The shaded area on the chart typically does not exceed 500' on each side of the cable or pipeline, and no other information as to the character or ownership of the installation appears on the chart.

Submarine Cables, NOAA ENC GIS Direct, 2010

NOAA ENC GIS Direct data reviewed and found not to be relevant:

Approach Harbor Silo Tank point – Includes only land based features

Approach Harbor Tunnel point - No features in study area

Metadata

Pipeline Areas

Description:

Abstract:

This dataset identifies locations that contain one or more submarine pipeline areas. The most recent NOAA Raster Navigational Charts (RNCs) were downloaded from <http://www.charts.noaa.gov/RNCs/RNCs.shtml> on August 5, 2011 for regions 1 and 2. Each chart at the 1:40,000 to 1:20:000 scale range was examined, with some additional charts at 1:15,000 for some locations. The RNCs were examined to identify and digitize pipeline areas in ArcGIS. Digitization occurred at scales ranging from 1:12,000 to 1:4,000. The submarine cable areas dataset APPROACH_HARBOR_CBLARE_poly from NOAA ENC Direct to GIS was downloaded for the northeast region using the bounding coordinates North: 44, South: 37, East: -65, and West -74. Where existing cable area features from the ENC Direct to GIS dataset corresponded to pipeline areas, that feature was copied into the new pipeline areas dataset.

Purpose:
This dataset shows locations of pipeline areas in the marine environment in the northeastern U.S. to indicate areas that may limit marine activities including transportation, dragging, or trawling.
Time_Period_of_Content:
Time_Period_Information:
Single_Date/Time:
Calendar_Date: 2011-10

Data_Quality_Information:
Attribute_Accuracy:
Attribute_Accuracy_Report:
Attributes followed the NOAA ENC Direct to GIS conventions where applicable.
Logical_Consistency_Report:
This dataset contains feature information for underwater pipeline areas. The process digitized new pipeline features based on NOAA RNCs. Where existing cable area features from the NOAA ENC Direct to GIS submarine cable area dataset corresponded to pipeline areas, the cable feature was copied into the pipeline dataset to preserve boundary consistency. This process strived to keep overlapping pipline features to a minimum, however some overlapping features represent correct information from multiple charts and were retained due to slight ambiguity or because one feature crossed more than one chart. This dataset strives to represent the most comprehensive and also least ambuiguous information, and therefore removal of all overlapping features is not possible.
Completeness_Report:
This dataset represents the pipeline areas in the northeastern U.S. based on the most recent NOAA Raster Navigational Charts as of August 5, 2011 for charts that have scales of up to 1:15,000. As this was not an automated, digital process, there may be some unaccounted for pipeline areas not identified through manual examination.
Positional_Accuracy:
Horizontal_Positional_Accuracy:
Horizontal_Positional_Accuracy_Report:
New pipeline areas were digitized from RNCs at scales ranging from 1:12,000 to 1:4,000 and attempted to conform to the pipeline area boundary at those levels. Dataset should not be used at scales beyond 1:350,000, based on the minimum scale indicated by the SCAMIN field of the NOAA ENC Direct to GIS dataset.

Process_Step:
Process_Description:
The NOAA ENCÂ® database has been built from a combination of charted information as well as original "source" information. NOAA has compiled critical features such as channel limits, aids to navigation, and obstructions from the original documents that were used to put the feature on the paper chart. The objective is to use the most accurate information for features that are critical to the safety of navigation. NOAA uses a number

of sources in compiling NOAA ENCÂ®S including U.S. Army Corps of Engineers surveys, drawings, and permits, U.S. Coast Guard Local Notices to Mariner, National Imagery and Mapping Agency Notices to Mariners, NOAA hydrographic surveys, and the largest scale paper chart of an area. ENCÂ® Direct to GIS data was created by transforming Approach and Harbor NOAA ENCÂ® version 2 cells to ESRI's shapefile format using Safe Software's Feature Manipulation Engine.
Process_Date: 200305 - present

Submarine Cables

Originator:
Department of Commerce, National Oceanic and Atmospheric Administration, National Ocean Service, Coastal Services Center
Publication_Date: 20110615
Title: Submarine Cables

Abstract:
These data depict the location of submarine cables as defined by the NOAA Electronic Navigation Charts and the NOAA Raster Nautical Charts.
Purpose:
To support coastal planning and other activities pursuant to the Coastal Zone Management Act, Energy Policy Act, Magnuson-Stevens Fishery Conservation and Management Act, National Environmental Policy Act, Rivers and Harbors Act and the Submerged Lands Act.
Process_Description:
Data extracted from NOAA Electronic Navigation Charts and loaded into ArcGIS 9.3.1 File Geodatabase

Vessel Traffic Density and Anchorage Areas

(Slide 16)

Large Vessel Density (AIS), TNC, 2012: The density grid was created using tracklines that were generated from the 2009 United States Automatic Identification System (AIS) Database. Vessel tracklines were created separately for each month, and a unique density grid per month. These grids were then summed together. The source AIS data is missing from June 5th through June 30th, so the data grids represent only 339 days in 2009.

Reference Source: Nationwide Automatic Identification System: http://www.uscg.mil/acquisition/nais/

Recreational traffic, K. Longley; SeaPlan and NROC; 2012:

The Northeast Recreational Boating Density Layer was created based on results of the 2012 Northeast Recreational Boater Survey conducted by SeaPlan and the Northeast Regional Ocean Council (NROC), in partnership with state coastal management programs and state marine trades associations in the Northeast.

The methodology for the 2012 Northeast Recreational Boater Survey follows a protocol similar to the 2010 Massachusetts Survey with modifications based on the lessons learned and recommendations suggested in the Massachusetts Survey Final Report.

The methodology consists of surveying a random sample of selected boat owners throughout the Northeast through a series of monthly online surveys. The surveying period lasted throughout the 2012 boating season (May 1 through October 31, 2012), which was identified by the advisory committee (consisting of NROC and representatives from the recreational boating industry).

Metadata

Large Vessel Density (AIS)

Data Source basis = Nationwide Automatic Identification System: http://www.uscg.mil/acquisition/nais/

Northeast and Mid - Atlantic United State
June 6, 2012
Prepared by:
Eric J. Howard, Marine GIS Analyst
The Nature Conservancy, Eastern U.S. Division
99 Bedford St. 5th Floor
Boston, MA 02111

1. INTRODUCTION

The AIS Vessel Trackline Density grid depicts the concentration of vessel traffic within the U.S. coastal

waters. The density grid was created using tracklines that were generated from the 2009 United States Automatic Identification System Database using a custom built trackline tool. Vessel tracklines were created separately for each month using the file geodatabases for UTM zones 18 and 19. A unique density grid was created for each combination of month and UTM zone. These grids were then summed together, clipped to the Northeast and Mid - Atlantic regions, and converted from floating point to integer grids. The source AIS data is missing from June 5th through June 30th, so the data grids represent only 339 days in 2009. Additionally, a line of zero values exists at the boundary between UTM zones 18 and 19 were valid vessel traffic maybe presents. This line exists because the AIS data was processed separately for each UTM zone.

Note: Description is not consistent with the data – the data is a floating point (not integer)grid ranging in value from -9.7383 to 8.68594 for Large Vessels.

<abstract>The 2011 United States Automatic Identification System Database contains vessel traffic data for planning purposes within the U.S. coastal waters. The database is composed of 204 self-contained File Geodatabases (FGDB). Each FGDB represents one month of data for a single UTM zone. The UTM zones represented cover the entire United States and include 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 14, 15, 16, 17, 18, and 19. Each FGDB consists of one feature class, four tables, and two relationship classes. The Broadcast point feature class contains the position reports, which have been pre-filtered to a one-minute time step. The Voyage table contains elements of the static data reports that are updated for each ship voyage. The Vessel table contains elements of the static data reports that are specific to a particular vessel. The BaseStations table lists the base stations collecting data for a particular month/UTM zone. The AttributeUnits table contains a list of units for each of the attribute fields in the Broadcast, Voyage, and Vessel tables. The BroadcastHasVessel relationship class relates the broadcast points to the vessel table records. The BroadcastHasVoyage relationship class relates the broadcast points to the voyage table records.</abstract>

<purpose>To support coastal planning and other activities pursuant to the Coastal Zone Management Act, Energy Policy Act, Magnuson-Stevens Fishery Conservation and Management Act, National Environmental Policy Act, Rivers and Harbors Act and the Submerged Lands Act.</purpose>

Nationwide Automatic Identification System: http://www.uscg.mil/acquisition/nais/

Recreational Boating

Northeast Recreational Boating Route Density
Northeast United States
March 20, 2013
Prepared by: Kate Longley, SeaPlan
89 South Street, Suite 202
Boston, MA 02111

The Northeast Recreational Boating Density Layer was created based on results of the 2012 Northeast Recreational Boater Survey conducted by SeaPlan and the Northeast Regional Ocean

Council (NROC), in partnership with state coastal management programs and state marine trades associations in the Northeast. The methodology for the 2012 Northeast Recreational Boater Survey follows a protocol similar to the 2010 Massachusetts Survey with modifications based on the lessons learned and recommendations suggested in the Massachusetts Survey Final Report.
The methodology consists of surveying a random sample of selected boat owners throughout the Northeast through a series of monthly online surveys. The surveying period lasted throughout the 2012 boating season (May 1 through October 31, 2012), which was identified by the advisory committee (consisting of NROC and representatives from the recreational boating industry).
The project team decided to use a random sample survey approach because it successfully gathered statistically robust economic and spatial data on recreational boating activity by Massachusetts registered boaters during the 2010 boating season. This was also the only approach that would allow for the calculation of statistically robust economic impact estimates for both the states and the region, which was identified as a priority (along with spatial data) by both NROC and the boating industry.

Conservation Areas

(Slide 17)

Charted Reef, shoal, reef/rock (NOAA 2002), updated with Deep Sea Corals from the Deep Sea Coral National Observation Database, Northeast Region (NOAA 2012).

CT Natural Diversity Database, (CTDEEP 2012) Compiled from March 2005-present

CT Protected Open Space, (CTDEEP 2005)

Additional processing included extracting features near the shorline, and assigning Type based on feature name into: Beach, Preserve/Refuge, Park.

Migratory Waterfowl (CTDEEP 1991) based on the Northeast Coastal Areas Study, Joseph Dowhan, 1991, supplemented with midwinter surveys, breeding surveys and personal observations by DEP wildlife Biologists.

Significant Coastal Fish and wildlife Boundaries, (NYSDEC, Revised 2013)

Land-based features were classified as Beach, Open Space and Park based on feature name. Supplemented with NYS Parks (NYCDEC, Date Unknown)

Local Waterfront Revitalization Program (LWRP), NYSDOS 2013

Provided via email by Jennifer L. Street, Coastal Resources Specialist, Division of Coastal Resources, NYSDOS 5/20/2013

Local Waterfront Revitalization Program community boundaries. The file contains the entire State of NY, but the only communities within the ZSF are the Town of Southold, Village of Greenport, Village of Sag Harbor and Town of East Hampton.

Also reviewed, but not used:

NY SSERSAV02 - No data in ELIS - only for south shore of LI

NY SAV_2002 - No data in ELIS - only for south shore of LI

NY SRV_2002 - No data in ELIS - only for south shore of LI

NOAA Marine Protection Areas – On-line map service shows National Wildlife Refuges that are not found in downloadable data: Block Island , Ninigret, Stewart B. Mckinney, Wertheim.

Coastal Barrier Resource System - includes CBRS Unit and "Otherwise Protected Area" features, but these are not defined in the metadata.

Metadata

Charted Reef, shoal, reef/rock (NOAA 2002), updated with Deep Sea Corals from the Deep Sea Coral National Observation Database, Northeast Region (NOAA 2012).

File: LIS_REEF_SHOAL_ROCK, CTDEEP – Hydrology GDB

Summary

Long Island Sound Reefs, Shoals, and Rocks is 1:20,000-scale data. It depicts the location of Reefs, Shoals and Rocks in the Connecticut waters of Long Island Sound. Use this layer to cartographically display their approximate locations on a map. Use this layer with 1:24,000-scale map data such as Connecticut Hydrography and similar basemap data layers. Not intended for maps printed at map scales greater or more detailed than 1:24,000 scale (1 inch = 2,000 feet.)

Description

Long Island Sound Reefs, Shoals, and Rocks is a 1:20,000-scale, point feature-based layer depicting reefs, shoals and rocks in the Connecticut waters of Long Island Sound. The layer is based on information from digital NOAA Nautical charts collected and compiled by MapTech Inc., during 2001-2002 and editied and published by the State of Connecticut Department of Environmental Protection in 2002.

The layer represents conditions at a particular point in time. The layer may not depict current conditions. The layer includes reefs, rocky outcrops, or shoals as they appear on the 2001 edition of Digital NOAA Nautical Charts with the political boundary of the State of Connecticut. It cannot be assumed that this layer includes ALL possible and/or potential reefs, rocky outcrops, or shoals and therefore THIS LAYER SHOULD NOT BE USED FOR NAVIGATIONAL PURPOSES.

Features are point locations that represent the approximate OR assumed center location of reefs, shoals, and rocks in Connecticut waters of Long Island Sound. Attribute information uniquely identifes individual features, and cartographically represents (symbolize) reef, shoals, and rock features on a map.

Data is compiled at 1:20,000 scale. This data is not updated.

CT Natural Diversity Database, (CTDEEP 2012) Compiled from March 2005-present

File: NATURAL_DIVERSITY_DATABASE

Summary

The Natural Diversity Database Areas is 1:24,000-scale data. It depicts the approximate locations of state and federal listed species and significant natural communities. This data is intended to be used as a pre-screening tool to identify potential impacts to sensitive species. The data may also be used to target areas of potential conservation interest. More information can be obtained by submitting written environmental review request to the Natural Diversity Database. Not intended for maps printed at map scales greater or more detailed than 1:24,000 scale (1 inch = 2,000 feet.)

Description

The Natural Diversity Database Areas is a 1:24,000-scale, polygon feature-based layer that represents general locations of endangered, threatened and special concern species and

significant natural communities. The layer is based on information collected by DEEP staff, cooperating scientists, conservation groups and landowners. In some cases an occurrence represents a location derived from literature, museum records and specimens. These data are compiled and maintained by the DEEP Bureau of Natural Resources, Natural Diversity Database Program. The layer is updated every six months and reflects information that has been submitted and accepted up to that point. The layer includes state and federally listed species and significant natural communities. It does not include Natural Area Preserves, designated wetland areas or wildlife concentration areas. These general locations were created by randomly shifting the true locations of each species and then adding a 0.25 mile buffer distance to each point. The exact location of the species or community falls somewhere within the polygon area and not necessarily in the center. Attribute information includes the date when these data were last updated. Species names are withheld to protect sensitive species from collection and disturbance. Data is compiled at 1:24,000 scale. These data are updated every six months, approximately in June and December. It is important to use the most current data available.

Credits

None. No restrictions or legal prerequisites for accessing the data. The data is in the public domain and may be redistributed.

CT Protected Open Space, (CTDEEP 2005)

File: PROTECTED_OPEN_SPACE

Summary

Use this layer to show protected open space as defined in the Protected Open Space Mapping project. Join this layer to the Protected Open Space Data table using the PAR_ID attribute. Then use the attribute data to, for example, display open space parcels by open space type or official name, compare current open space (as of the date of town hall data collection) to older open space data sources, or analyze the ratio of open space to developed or developable land in a particular Phase 2 town or region. Use this layer with base map data such as hydrography, orthophotography, streets, and topographic quadrangles. It can also be used with other related layers such as land use, DEP property, geologic features, soils, etc.

Description

This layer includes polygon features that depict protected open space for towns of the Protected Open Space Mapping (POSM) project. Only parcels that meet the criteria of protected open space as defined in the POSM project are in this layer. Protected open space is defined as: (1) Land or interest in land acquired for the permanent protection of natural features of the state's landscape or essential habitat for endangered or threatened species; or (2) Land or an interest in land acquired to permanently support and sustain non-facility-based outdoor recreation, forestry and fishery activities, or other wildlife or natural resource conservation or preservation activities. The Towns involved in the POSM project are listed below. These towns are Andover, Ansonia, Avon, Beacon Falls, Bethel, Bethlehem, Bloomfield, Brookfield, Bolton, Canaan, Canterbury, Canton, Chaplin, Clinton, Colchester, Columbia, Coventry, Cromwell, Derby, East Granby, East Haddam, East Hampton, East Hartford, East Windsor, Ellington, Enfield, Essex, Farmington, Franklin, Glastonbury, Goshen, Granby, Groton, Guilford, Haddam, Hampton, Hartford, Hebron, Kent, Killingworth, Ledyard, Lisbon, Litchfield, Madison, Manchester, Mansfield, Marlborough, Meriden, Middletown, Monroe, Montville, Morris, New Canaan, New Fairfield, New Hartford, New Milford, Newington, Newtown, North Norwich, Stonington, Oxford, Preston, Pomfret, Prospect, Redding, Ridgefield, Rocky Hill, Salem, Scotland, Seymour, Simsbury, Somers, South Windsor, Southbury, Southington, Sprague, Sterling, Stonington, Suffield, Thompson, Vernon, Voluntown, Wallingford, Watertown, West Hartford, Weston, Wethersfield, Willington, Wilton, Windsor, Windsor Locks, Windham, Wolcott, Woodbridge, and Woodbury. Additional towns are added to this list as they are completed. The layer is based on information from various sources collected and compiled during the period from March 2005 through the present. These sources include but are not limited to municipal Assessor's records (the Assessor's database, hard copy maps and deeds) and existing digital parcel data. The layer represents conditions as of the date of research at

each city or town hall. The Protected Open Space layer includes the parcel shape (geometry), a project-specific parcel ID based on the Town and Town Assessor's lot numbering system, and system-defined (automatically generated) fields. The Protected Open Space layer has an accompanying table containing more detailed information about each feature (parcel). This table is called Protected Open Space Dat, and can be joined to Protected Open Space in ArcMap using the parcel ID (PAR_ID) field. Detailed information in the Protected Open Space Data attribute table includes the Assessor's Map, Block and Lot numbers (the Assessor's parcel identification numbering system), the official name of the parcel (such as the park or forest name if it has one), address and owner information, the deed volume and page numbers, survey information, open space type, the unique parcel ID number (Par_ID), comments collected by researchers during city/town hall visits, and acreage. This layer does not include parcels that do not meet the definition of open space as defined above. Features are stored as polygons that represent the best available locational information, and are "best fit" to the land base available for each.

Credits

Source of dataset: State of Connecticut, Department of Environmental Protection

Additional Process Step:

Features near shoreline were extracted and assigned Type field based on feature name into Beaches, Preserve/Refuge, Park. Other features were deleted. (Atamian, May 2013)

Conservation Areas

Significant Coastal Fish and wildlife Boundaries, NYSDEC, Revised 2013

http://gis.ny.gov/gisdata/inventories/details.cfm?DSID=318

Statutory boundary describing significant coastal fish and wildlife habitats identified and recommended by Environmental Conservation and designated by Department of State. This data set is under development. Long Island and New York City areas are completed in draft form and require re-filing with local municipalities to replace paper map versions. Password would document distribution and subsequent facilitate revision notices.

Migratory Waterfowl (CTDEEP 1991)

File: MIGRATORY_WATERFOWL

Summary

Migratory Waterfowl is 1:24,000-scale data. It depicts concentration areas of migratory waterfowl in Connecticut. The intent of this datalayer is to assist in the identification of migratory waterfowl resource areas in the event of an oil spill or other condition that might be a threat to waterfowl species. This layer is not intended for maps printed at map scales greater or more detailed than 1:24,000 scale (1 inch = 2,000 feet.)

Description

Migratory Waterfowl is a 1:24,000-scale, polygon feature-based layer that depicts the concentration areas of migratory waterfowl at specific locations within Connecticut. Paul Merola, former DEP Wildlife Biologist, and Greg Chasko, DEP Wildlife Biologist, identified the migratory waterfowl concentration areas based on the Northeast Coastal Areas Study, Joseph Dowhan, 1991 (see Supplemental Information) as well as by using midwinter surveys, breeding surveys

and personal observations. The concentration areas are primarily found along the shoreline and the lower tributaries and wetlands of major Connecticut rivers. In addition to depicting the concentration areas, the potential waterfowl species associated with each polygon have been identified and are listed in the attribute table as boolean values indicating their presence or absence. The intent of this datalayer is to assist in the identification of migratory waterfowl resource areas in the event of an oil spill or other condition that might be a threat to waterfowl species. This layer identifies conditions at a particular point in time. It is not updated and it is not a complete representation of all areas of migratory waterfowl in Connecticut.

Significant Coastal Fish and wildlife Boundaries, (NYSDEC, Revised 2013)

File: SigHabs_SAVsubunit_acreage (prepared for NYSDOS by Greenhorn and O'Mara (2003)

NYS Cultural and Significant Natural Features (Showing Beach, Open Space, Park)

Abstract: In June 2002, 200 1:20,000 scale conventional-color metric film diapositives for Long Island,New York were collected as part of an effort to map submerged aquatic vegetation (SAV) in Long Island?s South Shore bays.They were provided by New York State Department of State's Division of Coastal Resources. Photographs were taken at low tide and during times that the growth stage of the SAV allowed for clear identification. Care was taken to minimize the effects of turbidity, sun glint, wind, and haze on the photos. The photos were scanned at a resolution of 15 microns. Ground control points were collected primarily from NYSDOS 2 ft orthophotos. Additional control points were collected from USGS DOQQs where coverage from the primary source was lacking. All elevations were derived from USGS digital elevation models. A bundle block adjustment was performed using Albany and exterior orientation paramaters were calculated. Boeing/Autometric's Softplotter was used to orthorectify the photos. The images were then dodged and mosaicked using Z/I's Orthopro. No additional color-balancing was performed as the mosaic's intended purpose was the delineation of benthic habitats. The mosaic was then output into 1000m by 1000m tiles with a 0.5m pixel resolution. The naming convention uses the first 3 numbers of the UTM x coordinate followed by the first 4 numbers in the UTM y coordinate of the southwest corner. Stereo digital images were created and the habitat features were interpreted and digitized on screen using softplotter microstation resulting in accurate and efficient 3D extraction of the data. Habitats were delineated with a high level of detail with the minimum mapping unit (MMU) being 0.01 hectares(approx.10m x 10m).The digitized polygons have the following specifications: Vertex Distance < 1.0 m Node Snap Distance < 4.0 m Arc Snap Distance < 4.0 m During August 2002, NOAA CSC & NYSDOS staff collected 95 field observations throughout the study area and this information was incorporated into the map. In June 2003, after reviewing the photography, questionable areas were visited by Greenhorne and O?Mara staff and the findings were subsequently applied to the map. The map layers show delineated polygons and lines representing benthic habitat data. Each polygon feature is given a 1,2,3 or 4 digit number representing 11 habitats. The item numbers are stored in the attribute table under Text. The benthic data is classified according to the System for Classification of Habitats in Estuarine and Marine Environments (SCHEME). This system is fully described in "Development of a System for Classification of Habitats in Estuarine and Marine Environments (SCHEME) for Florida, Report to U.S. EPA - Gulf of Mexico Program, Florida Fish and Wildlife Conservation Commission, Florida Marine Research Institute. Review Draft 12/04/02." The collected data was converted to an ARCGIS format for quality control and delivery. The data was assessed for horizontal spatial accuracy and thematic agreement during 2003.

Purpose: This task order pertains to the production and delivery of the following items: 1) The creation of digital arc benthic habitat data from existing conventional-color metric aerial photography of Long Island's south shore bays 2) The creation of digital polygon benthic habitat data from existing conventional-color metric aerial photography of Long Island's south shore bays 3) The creation of scanned ortho-rectified photographs of the study area in a geotiff format 4) The creation of a digital color balanced ortho-mosaic of the study area

Shellfish Beds

(Slide 18)

ApproachHarbor_Marine_Farm_Culture_point

NOAA ENC, downloaded 2013

Shellfish Beds, CTDEEP 1997

Summary

The Shellfish layer is 1:24,000-scale data. It depicts the approximate location of shellfish beds along the Connecticut coast and is suitable as a general means of identifying a resource area. This layer should not be construed to depict the actual, absolute locations of any shellfishing resources. Use this layer with other 1:24,000-scale map data such as the Coastal Boundary, Town Boundaries, Roads and Trails, Airports, Railroads and other base map data derived from the USGS 7.5 minute topographic quadrangle maps and compiled at a 1:24000 scale.

Description

Shellfish polygons were digitized from hand drawn polygons representing hardclam, softclam, and oyster beds produced by the Department of Agriculture from their records in 1990 (approximately).

The data is general in its nature and should be used only as a guide.

Connecticut Managed Shellfish Beds, CTDEEP 2004

The Connecticut Department of Environmental Protection cooperated with the Department of Agriculture, Bureau of Aquaculture to publish the Connecticut Mananged Shellfish Bed data. More recent information may now be available from Department of Agriculture since the time this information was originally published in 2004.

In Connecticut, shellfish are defined as oysters, clams, mussels and scallops; either shucked or in the shell, fresh or frozen, whole or in part. Scallops are excluded from this definition when the final product is the shucked adductor muscle only. Lobsters, crabs, snails and finfish are not included in this definition.

The CTDEP, Office of Long Island Sound Programs, needed the shellfish beds mapped to provide jurisdictional and ownership information in the coastal permit review process. This ties in with DA/BA statement above concerning "review of NPDES and Coastal Zone applications."

While this project was completed by working directly with these three main entities, it is believed that in the future there will be many other Federal, State and Local agencies that will find this data useful.

CT Managed Shellfish Bed data

Data Layers:

The end result of this project was four GIS data layers. The names of these layers are,

1) State Managed Beds

2) Town Managed Beds

3) Natural Beds

4)Recreational Beds

Rhode Island Shellfish Beds, RIDEM 1994

Shellfish information was provided by RIDEM, Division of Fish and Wildlife, Coastal Fisheries Lab. Data available as of 1994 to RIDEM, Division of Fish and Wildlife, Coastal Fisheries Lab. Unpublished data from RIDEM, Division of Fish and Wildlife, Coastal Fisheries

Draft Environmental Resource Conditions, Suffolk Co. Aquaculture Lease Program, Suffolk County Dept. of Planning, 2007 Includes eelgrass beds, shellfish beds, and shellfish restrictions in Peconic and Gardiners Bays. (data received from Sustan Filipowich, Suffolk Counth Dept of Economic Development and Planning, Division of Planning and Environment on 6/22/2013)

ApproachHarbor_Marine_Farm_Culture (NY Oyster/Mussel), NOAA ENC Downloaded 2013

This layer is used to depict shellfish areas in NY in lieu of alternate source. Data was filtered for shellfish characterized by "oyster/mussel".

Also Reviewed:

Shellfish Habitat, Northeast Ocean Data Portal - only includes data for MA and north; does not include data for LIS

Fishing Areas

(Slide 19)

Data Sources (Coverage area available for Rhode Island only):

Commercial Fisheries, Mobile (RIGIS 2009)

Fishing grounds used by RI commercial mobile gear fishermen. Mobile gear fisheries include trawling and scallop dredging.

Commercial Fisheries, Fixed (RIGIS 2009)

Fishing grounds used by RI commercial fixed gear fishermen. Fixed gear encompasses lobster pots, fish pots, and gill nets.

Recreational Fisheries (RIGIS 2009)

Fishing grounds used by RI recreational fishermen.

Data were collected through interviews and mapping exercises conducted with representatives of the RI Saltwater Anglers' Association, the RI Party and Charter Boat Association, and unaffiliated fishermen.

Commercial and recreational data were collected for use in of the RI Coastal Resource Management Council's Ocean Special Area Management Plan planning process and were also intended as an update and refinement to a similar set of maps created in 2004 by New England regional Sea Grant. This data layer was developed from September 2008 - January 2009 and published in February 2009. Data were collected through interviews and mapping exercises conducted in person, both one-on-one and in small groups, with representatives of the RI Fishermen's Alliance, independent fishermen, and unaffiliated fishermen.

Reviewed and not relevant to study area:

CTDEEP Fisheries Management Areas (Inland waters only)

Eelgrass Beds

(Slide 23)

EELGRASS

Per email to Bernward 5/31/13:

I spoke with Jamie Vaudrey on 5/31/2013 who provided some guidance on use of the eelgrass data layers for CT. The revised figure better corresponds to the US Fish & Wildlife 2009 eelgrass report. I was also able to locate 2012 data for Rhode Island, which is also presented here. A description of the data used follows.

Note that there are several data layers for CT Eelgrass (2002, 2006, 2009, historical). Data from 2002-2009 include separate point files where field investigations were conducted. Based on comments from the steering committee, this was not indicative of the bed locations. Only the most recent 2009 polygon features are used for the revised mapping in CT and LI as this layer best corresponds to the bed locations presented in the 2009 Eelgrass Survey for Long Island Sound, Connecticut and New York prepared by the U.S. Fish & Wildlife Service. This dataset was supplemented for presentation with the 2012 Rhode Island Submerged Aquatic Vegetation data depicting areas of "eelgrass" and "widgeon grass and eelgrass".

Data on eelgrass for the ZSF include Connecticut Eelgrass Beds 2009, downloaded from the CTDEEP website, and Submerged Aquatic Vegetation (SAV) in Rhode Island Coastal Waters (2012) downloaded from the RIGIS website.

Eelgrass data for Connecticut and the North Shore of Long Island were created by the Conservation Management Institute, Virginia Tech University for the USFWS National Wetlands Inventory, Region 5 and distributed by through the Connecticut Department of Energy and Environmental website. The project area encompasses the eastern end of Long Island Sound, including Fishers Island and the North Fork of Long Island. It includes all coastal embayments and nearshore waters (i.e., to a depth of -15 feet at mean low water) bordering the Sound from Clinton Harbor in the west to the Rhode Island border in the east and including Fishers Island and the North Shore of Long Island from Southold to Orient Point and Plum Island. The study area includes the tidal zone of 18 sub-basins in Connecticut: Little Narragansett Bay, Stonington Harbor, Quiambog Cove, Mystic Harbor, Palmer-West Cove, Mumford Cove, Paquonock River, New London Harbor, Goshen Cove, Jordan Cove, Niantic Bay, Rocky Neck State Park, Old Lyme Shores, Connecticut River, Willard Bay, Westbrook Harbor, Duck Island Roads, and Clinton Harbor, and two areas in New York: Fishers Island and a portion of the North Shore of Long Island. Delineations of 2009 eelgrass beds were completed using 1:20,000 true color aerial photography flown at low tide on 7/14/2009 and 7/15/2009. Extensive field work was conducted by the USFWS Region 5 Southern New England-New York Bight Coastal Program Office in October, November, and

December 2009 with 193 field sites checked. The 2009 photography was scanned and geo-rectified using 2006 NAIP 1 meter true color imagery.

Rhode Island's "Submerged Aquatic Vegetation" dataset depicts eelgrass and other SAV, including widgeon grass. These data were developed by the Rhode Island Eelgrass Mapping Task Force and distributed through the University of Rhode Island Geographic Information System (RIGIS). Polygons of submerged aquatic vegetation (SAV) were delineated from photo signatures identified on 4 band orthophotography. Ground truthing was done after initial delineations where completed. Ground-truthing was done by boat using underwater video equipment and GPS. Final delineation and GIS database development was done using ground truth information. Features characterized as "eelgrass" and "widgeon grass and eelgrass" are depicted in the mapping. Beds characterized as "widgeon grass" only are not shown.

Northeast Ocean Data Portal (NODP).

(Initially used this data layer because I couldn't find data for RI. RI 2012 SAV data is now incorporated in GIS mapping and now superceedes the NODP data)

Metadata for RI from the NODP for Rhode Island – Rhode Island's "2012 Submerged Aquatic Vegetation" dataset contained 235 polygon features depicting eelgrass and other SAV, including widgeon grass. These data were developed by the Rhode Island Eelgrass Mapping Task Force and was provided by the University of Rhode Island Environmental Data Center. Polygons of submerged aquatic vegetation (SAV) were delineated from photo signatures identified on 4 band orthophotography. Ground truthing was done after initial delineations where completed. Ground-truthing was done by boat using underwater video equipment and GPS. Final delineation and GIS database development was done using ground truth information. Before inclusion in the regional database, this dataset was edited such that only sites that contained eelgrass were included. Additional attribute fields, including those describing ground-truthing status and methodology and site locations were eliminated due to lack of corresponding fields in the majority of the other states' datasets.

More information on eelgrass in Rhode Island can be found here.

http://www.edc.uri.edu/eelgrass/gisdata.html

Draft Environmental Resource Conditions, Suffolk Co. Aquaculture Lease Program, Suffolk County Dept. of Planning, 2007 Includes eelgrass beds, shellfish beds, and shellfish restrictions in Peconic and Gardiners Bays. Shellfish cultivation zone (data received from Susan Filipowich, Suffolk Counth Dept of Economic Development and Planning, Division of Planning and Environment on 6/22/2013)

Title: Submerged Aquatic Vegetation (SAV) in Rhode Island Coastal Waters (2012); SAV12

Originator: Rhode Island Eelgrass Mapping Task Force

http://www.edc.uri.edu/rigis/data/data.aspx?ISO=biota File: Submerged Aquatic Vegetation (2012)

Publication_Date: 20130214

URL: <http://www.edc.uri.edu/rigis

Distributed online via RIGIS

Abstract:

Polygons of submerged aquatic vegetation (SAV) were delineated from photo signatures identified on 4-band orthophotography. Ground truthing was done after initial delineations were completed. Ground truthing was done by boat using underwater video equipment and GPS. Final delineation and GIS database development was done using ground truth information. Over 235 delineations of eelgrass and widgeon grass were made, totaling 1,386 acres.

Purpose:

The mapping was done as part of the 3-tiered approach to mapping and monitoring SAV as described by Neckles et al., 2012

Supplemental_Information:

Bradley, M., R. Hudson, M. Cole, and K, Raposa. 2013. 2012 Mapping Submerged Aquatic Vegetation (SAV) in Rhode Island Coastal Waters

Process_Description:

Field delineations made (areas to be ground truthed) and ground truthing conducted. GIS data development and final delineations made using the ground truth data.

Source_Used_Citation_Abbreviation: 2012 orthophotography

Attribution: habitat

Domain Values:

eelgrass - Site habitat characterized as eelgrass.

widgeon grass - Site habitat characterized as widgeon grass (not presented in this map)

widgeon grass and eelgrass - Site habitat characterized as interspersed with eelgrass and widgeon grass.

Title: Connecticut Eelgrass Beds 2009 Poly

Note that there are several data layers for CT Eelgrass (2002, 2006, 2009, historical). Data from 2002-2009 include separate point files where field investigations were conducted. Based on comments from the steering committee, this was not indicative of the bed locations. Only the most recent 2009 polygon features are used for mapping in CT and LI as this layer best corresponds to the bed locations presented in the 2009 Eelgrass Survey for Long Island Sound, Connecticut and New York prepared by the U.S. Fish & Wildlife Service. This dataset was supplemented for presentation with the 2012 Rhode Island Submerged Aquatic Vegetation data depicting areas of "eelgrass" and "widgeon grass and eelgrass".

Originators: USFWS NWI Region 5

Publication date: Unknown

Data type: vector digital data

Data location: http://www.ct.gov/deep

http://www.ct.gov/deep/cwp/view.asp?a=2698&q=322898 File: Connecticut Eelgrass Beds 2009 Poly

Abstract: This data layer was created by the Conservation Management Institute, Virginia Tech University for the USFWS National Wetlands Inventory, Region 5. The project area encompasses the eastern end of Long Island Sound, including Fishers Island and the North Fork of Long Island. It includes all coastal embayments and nearshore waters (i.e., to a depth of -15 feet at mean low water) bordering the Sound from Clinton Harbor in the west to the Rhode Island border in the east and including Fishers Island and the North Shore of Long Island from Southold to Orient Point and Plum Island. The study area includes the tidal zone of 18 sub-basins in Connecticut: Little Narragansett Bay, Stonington Harbor, Quiambog Cove, Mystic Harbor, Palmer-West Cove, Mumford Cove, Paquonock River, New London Harbor, Goshen Cove, Jordan Cove, Niantic Bay, Rocky Neck State Park, Old Lyme Shores, Connecticut River, Willard Bay, Westbrook Harbor, Duck Island Roads, and Clinton Harbor, and two areas in New York: Fishers Island and a portion of the North Shore of Long Island. Delineations of 2009 eelgrass beds were completed using 1:20,000 true color aerial photography flown at low tide on 7/14/2009 and 7/15/2009. Extensive field work was conducted by the USFWS Region 5 Southern New England-New York Bight Coastal Program Office in October, November, and December 2009 with 193 field sites checked. The 2009 photography was scanned and geo-rectified using 2006 NAIP 1 meter true color imagery.

Data have been summarized in a technical report: Tiner, R., K. McGuckin, M. Fields, N. Fuhrman, T. Halavik, and A. MacLachlan. 2010. 2009 Eelgrass Survey for Eastern Long Island Sound, Connecticut and New York. U.S. Fish and Wildlife Service, National Wetlands Inventory Program, Northeast Region, Hadley, MA. National Wetlands Inventory report. 16 pp. plus Appendix.

Purpose: This dataset was developed for an ongoing eelgrass monitoring of the Long Island Sound. Funding was provided by the EPA, Region 2.

Time Period of Data: 7/15/09

Process description: The 2009, 1:20000 true color photography was scanned and geo-rectified in ArcGIS 9.3 to NAIP 2006 true color 1 meter resolution imagery for Connecticut and New York. The 2006 eelgrass datalayer was used as a base, and polygonal data was added, subtracted or adjusted to reflect what was identified on the newer imagery. Field work was completed using a USFWS research vessel, and USFWS personnel. One Hundred Ninety Three sites were checked and documented. This information was converted to a point datalayer and used to adjust the original delineation. In some cases, very small beds that were identified during the field survey were mapped as points and buffered to yield a polygon of 0.1-acre in size. Bed density was determined using spectral signatures in the current imagery. 2006 and 2002 surveys and field observations were used to help identify these signatures in the initial drafts. Field observations from 2009 were then incorporated into the final revision and took precedence over previous density identifications. The interpretations were then displayed in map form using the 2009 digital imagery as the base map.

Process date: Sept '09 - May '10

Approved/Prohibited Shellfish Areas

(Slide 24)

Draft Environmental Resource Conditions, Suffolk Co. Aquaculture Lease Program, Suffolk County Dept. of Planning, 2007 Includes eelgrass beds, shellfish beds, and shellfish restrictions in Peconic and Gardiners Bays. Shellfish cultivation zone (data received from Susan Filipowich, Suffolk Counth Dept of Economic Development and Planning, Division of Planning and Environment on 6/22/2013)

Shellfish Cultivation Zone, Suffolk Co. 2009

Hard copy; superseded by GIS version from S. Filipowich above)

Draft compilation of data from:

NYS Digital Orthographic Aerials

Suffolk Co. Real Property Tax Map Parcel Line Work

Suffolk County Real Property Tax Service GIS Base Map

Field GPS locations and Verification. characterized by "oyster/mussel".

Shellfish Harvest Restrictions (RIGIS 2013)

Data defining shellfishing prohibition areas, seasonal, and conditional shellfish closure areas, and areas open to legal shellfish harvesting in RI marine and estuarine waters in accordance with the provisions of: Title 20, Chapter 8.1 Of the General Laws of 1956, entitled "shellfish grounds".

Shellfish Area Classification (CTDEEP, CT DA/BA 2007)

Classifications of shellfish growing waters for the State of Connecticut shoreline towns. This datalayer is composed of polygon features. The shellfishing areas are delineated and classified by the DA/BA, which is the state shellfish control authority in Connecticut. The Connecticut Department of Environmental Protection (DEP) applied information from the DA/BA to the hydrography data to create digital data of shellfish area classifications.

A shellfish growing area is any area which supports or could support the growth and/or propagation of molluscan shellstock (live clams, oysters, mussels and scallops in their shell). All shellfish growing areas are classified in accordance with the Interstate Shellfish Sanitation Conference (ISSC) National Shellfish Sanitation Program Model Ordinance (NSSP-MO). These classifications established to minimize health risks, may restrict the taking and use of shellfish from some areas. No fresh water areas have been classified for the harvesting of shellfish.

Shellfishing areas are reevaluated annually for improvements or degradation of water quality and status of pollution sources. An area which does not meet all of the NSSP-MO criteria for its current classification, due to new or existing pollution sources or degradation of water quality, will have its classification downgraded. Elimination of biological and

chemical hazards including pollution sources, and a sufficient quantity of satisfactory seawater data collected under adverse hydrographic and meteorologic conditions may result in upgrading of the current classification. Town efforts that result in evidence supporting a reclassification are carefully considered. The work conducted by the Connecticut Department of Agriculture/Bureau of Aquaculture (DA/BA) to classify waters in each town, results in a Comprehensive Evaluation Report,including a shoreline survey and water quality data every twelve (12) years, an Annual Assessment Report of shoreline changes and data analyses and a Triennial Evaluation Report every three (3) years. These reports describe pollution sources and their potential impact, statistical analyses of seawater samples, corrective actions, and classification recommendations that provide evidence of conformance to the NSSP-MO. These reports are submitted to the US Food and Drug Administration (USFDA) for review and evaluation of DA/BA compliance with the NSSP-MO.

At the discretion of the DA/BA, any shellfish area, regardless of its classification may be temporarily closed to all activities when a potential public health emergency exists as a result of a storm event or flooding, a sewage, chemical, or petroleum discharge or a hazardous algal bloom.

A shellfish growing area is any area which supports or could support the growth and/or propagation of molluscan shellstock (live clams, oysters, mussels and scallops in their shell). All shellfish growing areas are classified in accordance with the Interstate Shellfish Sanitation Conference (ISSC) National Shellfish Sanitation Program Model Ordinance (NSSP-MO). These classifications established to minimize health risks, may restrict the taking and use of shellfish from some areas. No fresh water areas have been classified for the harvesting of shellfish.
Shellfishing areas are reevaluated annually for improvements or degradation of water quality and status of pollution sources. An area which does not meet all of the NSSP-MO criteria for its current classification, due to new or existing pollution sources or degradation of water quality, will have its classification downgraded. Elimination of biological and chemical hazards including pollution sources, and a sufficient quantity of satisfactory seawater data collected under adverse hydrographic and meteorologic conditions may result in upgrading of the current classification. Town efforts that result in evidence supporting a reclassification are carefully considered. The work conducted by the Connecticut Department of Agriculture/Bureau of Aquaculture (DA/BA) to classify waters in each town, results in a Comprehensive Evaluation Report,including a shoreline survey and water quality data every twelve (12) years, an Annual Assessment Report of shoreline changes and data analyses and a Triennial Evaluation Report every three (3) years. These reports describe pollution sources and their potential impact, statistical analyses of seawater samples, corrective actions, and classification recommendations that provide evidence of conformance to the NSSP-MO. These reports are submitted to the US Food and Drug Administration (USFDA) for review and evaluation of DA/BA compliance with the NSSP-MO.
At the discretion of the DA/BA, any shellfish area, regardless of its classification may be temporarily closed to all activities when a potential public health emergency exists as a result of a storm event or flooding, a sewage, chemical, or petroleum discharge or a hazardous algal bloom.
NOTE: No shellfish may be brought to shore during emergency closures.
The shellfishing area classifications and criteria are specified by the NSSP Model Ordinance and the Connecticut General Statutes. They are summarized as follows:
APPROVED AREA
A shellfishing area classification that conforms to NSSP-MO criteria for the growing and harvesting of shellfish for recreational and commercial use and direct consumption. Commercial operations, such as harvesting and direct marketing of shellfish must be licensed by the DA/BA.
Activities allowed in Approved areas during "emergency" closures are limited to relaying operations as specified on the license for such activity, or for the cultivation of shellfish including consolidation or inspection of product, and predator control (mopping for starfish). Prior to conducting any activity in an Approved area during an "emergency" closure, the licensee must notify the local shellfish control authority and State of Connecticut Department of Environmental Protection (DEP) Division of Law

Enforcement ((860)-424-3333 (860)-424-3333 FREE 24-hour Dispatcher) of their intended activity.

Note: No shellfish may be brought to shore from Approved areas during "emergency" closures.
This classification is determined by a sanitary survey conducted by DA/BA with local assistance. The sanitary survey demonstrates conformance to NSSP-MO bacteriological criteria and the absence of dangerous levels of poisonous and deleterious substances. A sanitary survey consists of a shoreline survey to identify and assess all actual and potential pollution sources, hydrographic and meteorologic affects, water quality examination and assessment of standards.
The fecal coliform geometric mean of the water samples must not exceed 14 fecal coliforms per 100 ml, using the most probable number (MPN) method, and not more than 10.0% of all sample results may be >43 fecal coliforms per 100 ml. A minimum of five (5) seawater samples must be collected annually during adverse pollution conditions. A minimum of 15 seawater samples, collected over a three-year period, during adverse pollution conditions, must be used for a geometric mean. Adverse pollution conditions have been defined by the NSSP-MO as a state or situation caused by meteorological, hydrological or seasonal events and point or non-point source discharges that have historically resulted in elevated fecal coliform levels in a particular growing area.
CONDITIONALLY APPROVED AREA
A shellfishing area classification that predictably does not conform to "Approved" area criteria due to the occurrence of specified hydrologic or meteorologic events or conditions, but will predictably return to the "Approved" area criteria. Activities allowed in Conditionally Approved areas during a "closed" status are limited to relaying operations and seed oyster harvesting as specified on the license for such activity, or for the cultivation of shellfish including consolidation or inspection of product, and predator control (mopping for starfish). Prior to conducting any activity in a Conditionally Approved area during the "closed" status, the licensee must notify the local shellfish control authority and State of Connecticut Department of Environmental Protection (DEP) Division of Law Enforcement ((860)-424-

3333 (860)-424-3333 FREE 24-hour Dispatcher) of their intended activity. Activities allowed in the Conditionally Approved area during "open"status are the same as those for an Approved area.
Note: No shellfish may be brought to shore from Conditionally Approved areas during a "closed" status.
The Conditionally Approved area shellfishing status is designated "open" for shellfishing when it conforms to the written management plan, a Memorandum of Understanding (MOU). A MOU is required for a Conditionally Approved area which describes the management criteria for the area as well as the standards for an Approved classification when the status is designated "open". The area status is designated "closed" for shellfishing when it does not conform to the Approved classification or performance standards specified by the MOU. The duration of closure is based upon a sanitary survey and established performance standards specified in the MOU. The area is opened and closed by the shellfish control authority as specified in the MOU.
The bacteriological standard for the Conditionally Approved Area when "open" is the same as the Approved Area classification. A minimum of one (1) seawater sample per station must be collected each month when the area is designated "open". Sampling after a closure may be required prior to reopening.
RESTRICTED-RELAY/DEPURATION
A shellfishing area classification that conforms to NSSP-MO criteria that allows the area to be used by DA/BA licensed operations for the relaying of shellfish to a depuration plant for controlled purification, to designated beds in Approved or Conditionally Approved areas for natural cleansing or to areas satisfactory to the DA/BA, excluding Prohibited, Conditionally Restricted-Relay, and Restricted-Relay areas. These shellfish may not be directly harvested for market nor consumed prior to the purification process involving relay or depuration.
This classification requires a sanitary survey and conformance with specified bacteriologic standards. The fecal coliform geometric mean of the water must not exceed 88 per 100 ml, using the most probable number (MPN) method, and not more than 10 percent of the samples may exceed a MPN of 260 per 100 ml. A minimum of five (5) seawater samples from each station must be collected annually during adverse pollution conditions.
This classificationdetermination is not routinely made due to the strict water quality criteria, limited resources in these small areas, and lack of depuration plants accepting "Restricted for Depuration" shellfish. Determinations are made when requested by the industry.
CONDITIONALLY RESTRICTED-RELAY/DEPURATION
A shellfishing area classification that predictably does not conform to Restricted-Relay/Depuration area criteria due to the occurrence of specified hydrologic or meteorologic events or conditions, but will

predictably return to the Restricted-Relay/Depuration area criteria. A written area management plan (MOU) must be developed for a conditional area. The MOU shall be based upon an evaluation of potential pollution sources that may impact the area and their correlation with predictable environmental conditions or other factors affecting the distribution of pollutants.
The Conditionally Restricted-Relay/Depuration area is designated "open" when it conforms to the standards for a Restricted-Relay/Depuration classification. The shellfish can be relayed to a depuration plant for controlled purification or to designated beds in an Approved or Conditionally Approved area for natural cleansing or to areas satisfactory to the DA/BA, excluding Prohibited, Conditionally Restricted-Relay, and Restricted-Relay areas. The area status is designated "closed" when it does not conform to the Restricted-Relay/Depuration classification as specified in the management plan. The duration of closure is conditional based upon a sanitary survey and established performance standards specified in the management plan.
This classification requires a sanitary survey and conformance with specified bacteriological standards. The bacteriological standard for this water classification when designated "open" is the same as the Restricted-Relay/Depuration area. A minimum of one (1) seawater sample from each station must be collected each month when the area is designated "open."
This classification determination is not routinely made due to the strict water quality criteria, limited resources in these small areas, and lack of depuration plants accepting "Restricted for Depuration" shellfish. Determinations are made when requested by the industry.
RESTRICTED RELAY
A shellfishing area classification where DA/BA allows aquaculture, relay or transplant activities in conformance to NSSP-MO criteria. Operations may be licensed to relay shellfish to designated beds in Approved or Conditionally Approved areas for natural cleansing.
These shellfish may not be directly harvested for market or consumed prior to a minimum purification period of 14 consecutive days after being relayed to Approved or Conditionally Approved"open" areas with a water temperature of 50 degrees Fahrenheit (10 degrees Celsius) or greater. DA/BA may require the shellfish purification time to be longer than 14 consecutive days, based upon shellfish purification verification studies.
This classification requires a sanitary survey and collection of water quality data. A minimum of five (5) seawater samples from each station must be collected annually during adverse pollution conditions.
CONDITIONALLY RESTRICTED-RELAY
A shellfishing area classification that predictably does not conform to Restricted-Relay area criteria due to the occurrence of specified events or conditions, but predictably returns to the Restricted-Relay area criteria. A written management plan, or Memorandum of Understanding (MOU), must be developed for a conditional area. The MOU shall be based upon an evaluation of actual or potential pollution sources that may impact the area and their correlation with predictable environmental conditions or other factors affecting the distribution of pollutants.
The Conditionally Restricted-Relay area is designated "open" for relay of shellfish when it conforms to the MOU and the standards for a Restricted-Relay classification. The area status is designated "closed" for shellfish relay when it does not conform to the Restricted-Relay classification as specified in the MOU.
The duration of closure is based upon the performance standards specified in the MOU. A minimum of one (1) seawater sample per station must be collected each month when the area is designated "open".
PROHIBITED AREA
A shellfishing area classification which does not conform with other NSSP-MO classification criteria. This classification prohibits the harvesting of shellfish for any purpose except depletion or aquaculture operations (such as seed oystering) licensed by the DA/BA.
A Prohibited shellfish growing area is closed for the harvesting of shellfish (except licensed aquaculture operations) at all times. This classification may be assigned to specified areas with direct exposure to fecal, industrial or environmental contamination to the extent that the consumption of shellfish harvested in the area may be potentially hazardous to health after a shellfish purification (relay) period of less than six (6) months are classified "Prohibited". Aquaculture operations may be suspended for such areas.
Areas with incomplete sanitary surveys, including lack of water quality data analysis, lack of a complete shoreline survey, or when the area does not conform to the requirements for the classification of a Restricted-Relay area or better also require this classification.

Environmental contamination may also include specified areas in which shellfish contain 80 micrograms or greater of paralytic shellfish poisoning toxin per 100 grams of shellfish meat, contain other unacceptable levels of marine biotoxins, or contain unacceptable levels of poisonous or deleterious substances or organisms are classified as Prohibited when such events are constant or reoccurring. Aquaculture operations may be suspended for such areas.

RELAYING

The transfer of shellfish from restricted areas, conditionally restricted areas in the open status, or conditionally approved areas in the closed status to approved or conditionally approved areas in the open status for the reduction of pathogens as measured by the coliform indicator group or poisonous or deleterious substances that may be present, by using the ambient environment as a treatment process.

DEPURATION

The process of using a controlled, aquatic environment to reduce the level of bacteria and viruses in live shellfish.

MARINA

Any water area with a structure (dock, basin, floating dock, etc.) which is utilized for docking or otherwise mooring vessels and constructed to provide temporary or permanent docking space for more than ten (10) boats.

CONTROL OF AREAS USED AS A MARINA

The suitability of some areas for harvesting shellfish will be impacted if the area is used as a marina. The biological and chemical contamination associated with marina facilities may be of public health significance. A prohibited, conditionally restricted or conditionally approved classification of that area within the marina proper is required. Similar classifications will be required if waters adjacent to the marina are impacted. A dilution analysis will be used for making marina closure determinations.

Historic and Active Disposal Sites

(Slide 25)

Data Source:

Historic and Active Disposal Sites, (DAMOS, updated 2013)

Developed from DAMOS data to display the location and extent of identified disposal sites in Long Island Sound and offshore. Updated to include the active Rhode Island Disposal Site.

Archaeological and Cultural Resources

(Slide 26)

Wrecks and Obstructions

NOAA Data Source:

http://www.nauticalcharts.noaa.gov/hsd/awois.html

Downloadable in KMZ format as separate files for Wrecks and Obstructions.

Attributes include a numerical name code

Note: NOAA AWOIS data was compared with data compiled and included in the Northeast Ocean Data Portal (NEODP), and found to be more current. The NEODP includes a better (easier to use in GIS) description of each feature.

Existing Information *(as identified to-date):*

PAL (2010) prepared a cultural resources inventory for the DMMP that included archaeological sites and sensitivity of the coastal area bordering Long Island Sound and Block Island Sound. This inventory included an area underwater within one-half mile of the shoreline and inland at a distance of no greater than 10 miles, i.e., not in deeper ZSF waters considered for potential dredged material disposal sites. The literature within WHG (2010) did not provide any documents on archaeological resources.

Jean Brochi provided a screen capture of the PAL 2010 data, which I georeferenced and overlaid on our figures. All points fell within the 18m exclusion zone. (5/31/2013)

Data on wrecks and obstructions for the ZSF are available from the NOAA Automated Wreck and Obstruction Information System (AWOIS) (shown in Figures xx and xxx (closeup for ELIS). The AWOIS system was developed to catalog reported wrecks and obstructions that are considered navigational hazards, and includes unverified accounts of vessel casualties and chronological history. As part of the hydrographic survey planning process, these records are reviewed and those wrecks or obstructions and may be field investigated for verification. The results of these investigations eventually become part of the AWOIS record. AWOIS is not a comprehensive record of wrecks in any particular area. There are wrecks in AWOIS that do not appear on the nautical chart and there are wrecks on the nautical chart that do not appear in AWOIS. Updates to AWOIS are ongoing; however, it will never completely address every known or reported wreck. The emphasis is constantly placed on wrecks which may be a hazard to navigation. Additionally, features that have been either disproved or salvaged are not included in AWOIS.

Wrecks are primarily ships, however aircraft may be included. Obstructions may include natural

features such as rocks and shoals, manmade items such as shipping containers, disposal sites or other unidentified anomalies.

Per AWOIS - features that have been either disproved or salvaged are not included in AWOIS." – this may explain why there are some wrecks in the Northeast Ocean Data Portal from 2010 AWOIS data that no longer appear in the current NOAA version. I think we should just use the NOAA version.

Supplemental figure prepared showing the variation between Northeast Ocean Data Portal and current AWOIS data. Also, features in Northeast Ocean Data Portal identified as Sounding are now shown with a different symbol, and features denoted as Unknown were reviewed and found to overlay Obstructions, so these have been removed from the revised figure in the supplemental folder. Features in the NOAA version include descriptive information about each site, however these are easier to read in Google Earth. They can be viewed using map tips in ArcGIS but they display in XML format that is hard to read. (5/31/2013).

Data Sources:

Northeast Ocean Data Portal:

2010, Combines Wrecks and Obstructions in one file.

NOAA Data Source:

http://www.nauticalcharts.noaa.gov/hsd/awois.html

Downloadable in KMZ format as separate files for Wrecks and Obstructions.

Attributes include a numerical name code

The Office of Coast Survey's Automated Wreck and Obstruction Information System (AWOIS) contains information on over 10,000 submerged wrecks and obstructions in the coastal waters of the United States. Information includes latitude and longitude of each feature along with brief historic and descriptive details.

The Automated Wreck and Obstruction Information System (AWOIS) was implemented to assist the Office of Coast Survey in planning hydrographic survey operations and to catalog the substantial volume

of reported wrecks and obstructions considered navigational hazards within U.S. coastal waters. Providing a historical record of selected wrecks and obstructions, AWOIS is a valuable tool and information source for marine archaeologists and historians, fishermen, divers, salvage operators, and others in the marine community.

However, AWOIS has limitations that should be considered by potential users. Most notably, it is not a comprehensive record of wrecks in any particular area. There are wrecks in AWOIS that do not appear on the nautical chart and there are wrecks on the nautical chart that do not appear in AWOIS. Updates to AWOIS are ongoing; however, it will never completely address every known or reported wreck. The emphasis is constantly placed on wrecks which may be a hazard to navigation. Additionally, features that have been either disproved or salvaged are not included in AWOIS.

Reviewed/Not Used:

Archaelogical Data Source:

LIS DMMP, PAL 2010

Image provided by J. Brochi at EPA 5/30/2013 and georeferenced by LBG.

PAL, under contract with the U.S. Army Corps of Engineers, New England District, conducted a cultural resources inventory that

identifies historic properties including archaeological sites and sensitivity of 57 coastal communities in Fairfield, New Haven, Middlesex,

and New London Counties, Connecticut; Washington County, Rhode Island; and Westchester, Bronx, Queens, Nassau and Suffolk

Counties, New York, located along the Long Island Sound. These coastal communities include the area underwater within one-half mile

of the shoreline and inland at a distance of no greater than 10 miles. The cultural resources inventory for the LIS DMMP project study

area is provided in a Geographic Information Systems (GIS) database that includes cultural resources map overlays and metadata: 1)

information and locations for all historic properties (buildings, structures, landscapes, archaeological sites, shipwrecks, etc.) that are

included or eligible for listing in the National Register of Historic Places; and 2) archaeological sensitivity maps for terrestrial and

underwater archaeological resources that are suitable for external public review.

Ref by Woods Hole in DMMP 2012:

Recreational Areas and Navigation

(Slide 27)

Long Island Sound DMMP - Investigation of Potential Containment Sites for Placement of Dredged Materials, November 2012

Locations identified as potential upland disposal sites were filtered to select beaches by type or name. GIS Data prepared by Woods Hole for USGS. (Used to represent beach locations)

CT Protected Open Space, CTDEEP 2005

Protected Open Space in an inventory of open space as defined by the Department of Environmental Protection Protected Open Space Mapping (POSM) project. Only parcels that meet the criteria of protected open space defined in the project are included and are defined as:

Land or interest in land acquired for the protection of natural features of the state's landscape or essential habitat for endangered or threatened species; and

Land or an interest in land acquired to support and sustain non-facility-based outdoor recreation, forestry and fishery activities, or other wildlife or natural resource conservation or preservation activities.

Additional processing included extracting features near the shoreline, and assigning Beach/Park based on feature name.

Rhode Island State Conservation Lands, RIGIS 2011

Approximate edges of Conservation Lands protected by the State of Rhode Island through Fee Title Ownership, Conservation Easement, or Deed Restriction. Includes: Wildlife Management Areas, Drinking Water Supply Watersheds, State Parks, Beaches, Bike Paths, Fishing Access Areas, Local Parks and Recreation Facilities.

Additional processing included extracting features near the shoreline, and assigning Beach/Park based on feature name.

New York State Parks, NYDEC

Data provided by Batelle

Recreational Boating – (K. Longley; SeaPlan and NROC; 2012)

The Northeast Recreational Boating Density Layer was created based on results of the 2012 Northeast Recreational Boater Survey conducted by SeaPlan and the Northeast Regional Ocean Council (NROC), in partnership with state coastal management programs and state marine trades associations in the Northeast.

The methodology for the 2012 Northeast Recreational Boater Survey follows a protocol similar to the 2010 Massachusetts Survey with modifications based on the lessons learned and recommendations suggested in the Massachusetts Survey Final Report.

The methodology consists of surveying a random sample of selected boat owners throughout the Northeast through a series of monthly online surveys. The surveying period lasted throughout the 2012 boating season (May 1 through October 31, 2012), which was identified by the advisory committee (consisting of NROC and representatives from the recreational boating industry).

Alternative Energy

(Slides 30-32)

Wind Power Class, USDOE 1986

Screen image from NREL.gov

Wind Planning Areas, BOEM 2011

Produced by: Bureau of Ocean Energy Management, Office of Renewable Energy Programs; Downloaded from Northeast Ocean Data Portal, 2013

Wind Planning Areas in this dataset represent up to six different types of announcements within the U.S. Federal Register that can be used to show the current status of an area that is being considered for Wind Power Development. The Smart from the Start Wind Energy Areas (WEAs) are also represented in this layer. When an area type changes status, it will be replaced entirely by the new area. The types of areas and their descriptions can be found in the Attributes section of the metadata record.

Proposed site of Cape Wind Turbines, Nantucket Sound, MA 2005

proposed locations of individual wind turbines as part of the Cape Wind energy project located on Horseshoe Shoal in Nantucket Sound off the Massachusetts coast. Coordinates were based on GPS coordinates and reflects the revised Project layout of 070505.

Renewable Energy Zone, RI OceanSAMP 2010

proposed locations of individual wind turbines as part of the Cape Wind energy project located on Horseshoe Shoal in Nantucket Sound off the Massachusetts coast. Coordinates were based on GPS coordinates and reflects the revised Project layout of 070505.

Wave Energy, NREL 2013

The project estimated the naturally available and technically recoverable U.S. wave energy resources, using a 51-month Wavewatch III hindcast database developed especially for this study by National Oceanographic and Atmospheric Administration's (NOAA's) National Centers for Environmental Prediction. For total resource estimation, wave power density in terms of kilowatts per meter is aggregated across a unit diameter circle. This approach is fully consistent with accepted global practice and includes the resource made available by the lateral transfer of wave energy along wave crests, which enables densities within a few kilometers of a linear array, even for fixed terminator devices.

Tidal Energy

Screen capture from NREL.gov

Massachusetts Office of Coastal Zone Management 2009, GA Tech